REMARKS

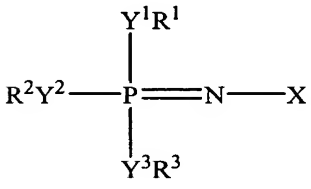
Claims 1-20 are pending in this application. By this Amendment, claims 1, 8, 15 and 19 are amended. Support for the amendments to claims 1, 8, 15 and 19 can be found in the specification as originally filed, for example, at page 23, line 9 - page 24, line 10 and page 25, line 22 - page 26, line 15; and in original claims 1, 8, 15 and 19. No new matter is added by these amendments.

I. Claim Rejections Under 35 U.S.C. §103

A. Claims 1-3 and 8-20

The Office Action rejects claims 1-3 and 8-20 under 35 U.S.C. §103(a) over Japanese Patent Application Publication No. JP 11-144757 to Naruyuki et al. ("Naruyuki 757"). Applicants respectfully traverse this rejection.

Claim 1 sets forth, in pertinent part, a "non-aqueous electrolyte cell comprising a non-aqueous electrolyte that contains lithium ions and more than 2.5 % by volume of a phosphazene derivative having a flash point of not lower than 100°C, and a positive electrode, and a negative electrode capable of absorbing and releasing lithium; wherein the phosphazene derivative is a liquid at room temperature; wherein the phosphazene derivative is represented by any of the following general formula (1) or (2): Formula (1)



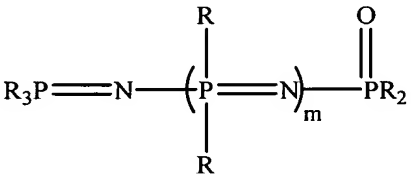
wherein R^1, R^2 and R^3 each represents a monovalent substituent or a halogen element; X represents an organic group containing at least one element selected from carbon, silicon, germanium, tin, nitrogen, phosphorus, arsenic, antimony, bismuth, oxygen, sulfur, selenium, tellurium and polonium; and Y^1, Y^2 and Y^3 each represent a divalent linking group, a divalent element or a single bond; and in at least one of Y^1R^1, Y^2R^2 and Y^3R^3, Y is a single bond and R is a halogen atom; Formula (2) $(PNR^4_2)n$ wherein R^4 represents a halogen

element; and n falls between 3 and 15." Claims 2 and 3 depend from claim 1 and include all of the limitations thereof. Independent claims 8, 15 and 19 set forth secondary cells including similar phosphazene compounds. Claims 9-14 depend from claim 8 and include all of the limitations thereof. Claims 16-18 depend from claim 15 and include all of the limitations thererof. Claim 20 depends from claim 19 and includes all of the limitations thereof.

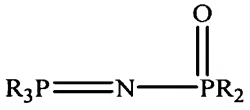
The Office Action asserts that Naruyuki 757 discloses and suggests all of the features of independent claims 1, 8, 15 and 19, and dependent claims 2, 3, 9-14, 16-18 and 20. Applicants respectfully disagree.

Naruyuki 757 teaches non-aqueous secondary cells including a positive electrode, a negative electrode, a $LiBF_4$ non-aqueous electrolyte, and a phosphazene derivative. *See* Naruyuki 757, paragraph [0011]. The Naruyuki 757 phosphazene derivative is disclosed as representable by either formula 757-(1) or formula 757-(2):

757-(1)



757-(2)

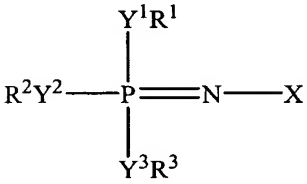


See Naruyuki 757, paragraph [0018]. In these formulae, each R is a monovalent organic radical group. *See* Naruyuki 757, paragraph [0019]. That is, Naruyuki 757 teaches that R in its phosphazene derivatives are organic groups, such as substituted or unsubstituted alkyl or alkoxy groups. However, Naruyuki 757 does not disclose or suggest that any R in the formulae for its phosphazene derivatives may be a halogen atom that is connected by a single bond to a phosphorus atom. *See generally* Naruyuki 757.

In contrast, independent claims 1, 8, 15 and 19 set forth that the claimed phosphazene compound is represented by either Formula (1), in which in at least one of Y^1R^1, Y^2R^2 and Y^3R^3 is a single bond to a halogen atom; or Formula (2), in which R^4 a halogen atom. That

is, claims 1, 8, 15 and 19 require that the phosphazene derivative includes at least one halogen atom to be bonded directly to a phosphorus atom.

Because Naruyuki 757 neither discloses or suggests a "phosphazene derivative is represented by any of the following general formula (1) or (2): Formula (1)



wherein R^1, R^2 and R^3 each represents a monovalent substituent or a halogen element; X represents an organic group containing at least one element selected from carbon, silicon, germanium, tin, nitrogen, phosphorus, arsenic, antimony, bismuth, oxygen, sulfur, selenium, tellurium and polonium; and Y^1, Y^2 and Y^3 each represent a divalent linking group, a divalent element or a single bond; and in at least one of Y^1R^1, Y^2R^2 and Y^3R^3, Y is a single bond and R is a halogen atom; Formula (2) $(PNR^4_2)n$ wherein R^4 represents a halogen element; and n falls between 3 and 15," as set forth in claims 1, 8, 15 and 19, Naruyuki 757 does not disclose or suggest all of the features of claims 1, 8, 15 or 19, or their respective dependent claims. Because Naruyuki 757 neither discloses nor suggests all of the features set forth in independent claims 1, 8, 15 and 19, Applicants respectfully submit that claims 1, 8, 15 and 19, and their respective dependent claims, would not have been obvious over Naruyuki 757.

For at least these reasons, Applicants respectfully submit that independent claims 1, 8, 15 and 19 and dependent claims 2, 3, 9-14, 16-18 and 20 are patentable over Naruyuki 757. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

B. <u>Claims 1-3 and 7-20</u>

The Office Action rejects claims 1-3 and 7-20 under 35 U.S.C. §103(a) over Japanese Patent Application Publication No. JP 06-013108 to Naruyuki et al. ("Naruyuki 108"). Applicants respectfully traverse this rejection.

Independent claims 1, 8, 15 and 19 are as discussed above. Claims 2, 3 and 7 depend from claim 1 and include all of the limitations thereof. Claims 9-14 depend from claim 8 and include all of the limitations thereof. Claims 16-18 depend from claim 15 and include all of the limitations thererof. Claim 20 depends from claim 19 and includes all of the limitations thereof.

The Office Action asserts that Naruyuki 108 discloses and suggests all of the features of independent claims 1, 8, 15 and 19, and dependent claims 2, 3, 7, 9-14, 16-18 and 20. Applicants respectfully disagree.

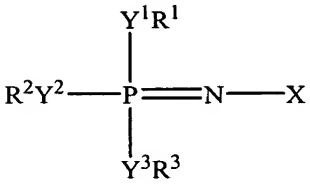
Naruyuki 108 teaches non-aqueous secondary cells including a positive electrode, a negative electrode, a $LiBF_4$ non-aqueous electrolyte, and a phosphazene derivative. *See* Naruyuki 108, paragraph [0011]. The Naruyuki 108 phosphazene derivative is disclosed as representable by either formula 108-(1) or formula 108-(2):

108-(1)	108-(2)
(NPR_2)	$R_3(P{=}N)_m\text{-}PR_4$

See Naruyuki 108, paragraph [0016]. In these formulae, each R is a monovalent organic radical group. *See* Naruyuki 108, paragraphs [0016]-[0017]. That is, Naruyuki 108 teaches that R in its phosphazene derivatives are organic groups, such as substituted or unsubstituted alkyl or alkoxy groups. However, Naruyuki 108 does not disclose or suggest that any R in the formulae for its phosphazene derivatives may be a halogen atom that is connected by a single bond to a phosphorus atom. *See generally* Naruyuki 108.

In contrast, independent claims 1, 8, 15 and 19 set forth that the claimed phosphazene compound is represented by either Formula (1), in which in at least one of Y^1R^1, Y^2R^2 and Y^3R^3 is a single bond to a halogen atom; or Formula (2), in which R^4 a halogen atom. That is, claims 1, 8, 15 and 19 require that the phosphazene derivative includes at least one halogen atom to be bonded directly to a phosphorus atom.

Because Naruyuki 108 neither discloses or suggests a "phosphazene derivative is represented by any of the following general formula (1) or (2): Formula (1)



wherein R^1, R^2 and R^3 each represents a monovalent substituent or a halogen element; X represents an organic group containing at least one element selected from carbon, silicon, germanium, tin, nitrogen, phosphorus, arsenic, antimony, bismuth, oxygen, sulfur, selenium, tellurium and polonium; and Y^1, Y^2 and Y^3 each represent a divalent linking group, a divalent element or a single bond; and in at least one of Y^1R^1, Y^2R^2 and Y^3R^3, Y is a single bond and R is a halogen atom; Formula (2) $(PNR^4_2)n$ wherein R^4 represents a halogen element; and n falls between 3 and 15," as set forth in claims 1, 8, 15 and 19, Naruyuki 108 alone does not disclose or suggest all of the features of claims 1, 8, 15 or 19, or their respective dependent claims. Because Naruyuki 108 neither discloses nor suggests all of the features set forth in independent claims 1, 8, 15 and 19, Applicants respectfully submit that claims 1, 8, 15 and 19, and their respective dependent claims, would not have been obvious over Naruyuki 108.

For at least these reasons, Applicants respectfully submit that independent claims 1, 8, 15 and 19 and dependent claims 2, 3, 7, 9-14, 16-18 and 20 are patentable over Naruyuki 108. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

C. Claims 1-20

1. Fui

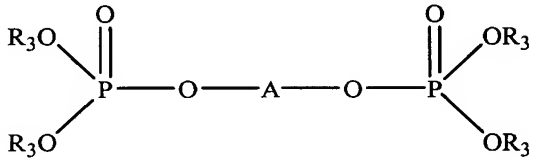
The Office Action rejects claims 1-20 under 35 U.S.C. §103(a) over Japanese Patent Application Publication No. JP 11-191431 to Fui et al. Applicants respectfully traverse this rejection.

Independent claims 1, 8, 15 and 19 are as discussed above. Claims 2-7 depend from claim 1 and include all of the limitations thereof. Claims 9-14 depend from claim 8 and include all of the limitations thereof. Claims 16-18 depend from claim 15 and include all of the limitations thererof. Claim 20 depends from claim 19 and includes all of the limitations thereof.

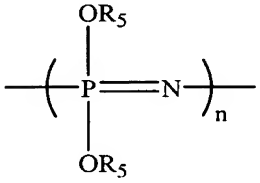
The Office Action asserts that Fui discloses and suggests all of the features of independent claims 1, 8, 15 and 19, and dependent claims 2-7, 9-14, 16-18 and 20. Applicants respectfully disagree.

Fui teaches non-aqueous secondary cells including a positive electrode, a negative electrode, a $LiBF_4$ non-aqueous electrolyte, and a phosphazene derivative. *See* Fui, paragraphs [0007]-[0011], [0023]. The Fui phosphazene derivative is disclosed as representable by either formula Fui -(1) or formula Fui -(2):

Fui-(1)



Fui-(2)

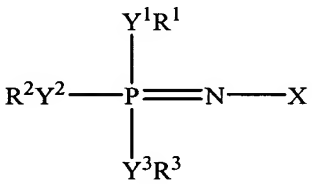


See Fui, paragraphs [0007]-[0011]. In these formulae, each R is a monovalent organic radical group. *Id.* That is, Fui teaches that R in its phosphazene derivatives are organic groups, such as substituted or unsubstituted alkyl groups, that are connected to a phosphorus atom by an oxygen linkage. However, Fui does not disclose or suggest that any R in the formulae for its phosphazene derivatives may be a halogen atom that is connected by a single bond to a phosphorus atom. *See generally* Fui.

In contrast, independent claims 1, 8, 15 and 19 set forth that the claimed phosphazene compound is represented by either Formula (1), in which in at least one of Y^1R^1, Y^2R^2 and

Y^3R^3 is a single bond to a halogen atom; or Formula (2), in which R^4 a halogen atom. That is, claims 1, 8, 15 and 19 require that the phosphazene derivative includes at least one halogen atom to be bonded directly to a phosphorus atom.

Because Fui neither discloses or suggests a "phosphazene derivative is represented by any of the following general formula (1) or (2): Formula (1)



wherein R^1, R^2 and R^3 each represents a monovalent substituent or a halogen element; X represents an organic group containing at least one element selected from carbon, silicon, germanium, tin, nitrogen, phosphorus, arsenic, antimony, bismuth, oxygen, sulfur, selenium, tellurium and polonium; and Y^1, Y^2 and Y^3 each represent a divalent linking group, a divalent element or a single bond; and in at least one of Y^1R^1, Y^2R^2 and Y^3R^3, Y is a single bond and R is a halogen atom; Formula (2) $(PNR^4_2)n$ wherein R^4 represents a halogen element; and n falls between 3 and 15," as set forth in claims 1, 8, 15 and 19, Fui alone does not disclose or suggest all of the features of claims 1, 8, 15 or 19, or their respective dependent claims. Because Fui neither discloses nor suggests all of the features set forth in independent claims 1, 8, 15 and 19, Applicants respectfully submit that claims 1, 8, 15 and 19, and their respective dependent claims, would not have been obvious over Fui.

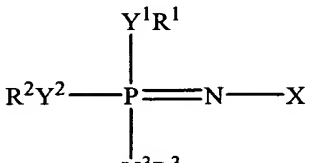
For at least these reasons, Applicants respectfully submit that independent claims 1, 8, 15 and 19 and dependent claims 2-7, 9-14, 16-18 and 20 are patentable over Fui. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

2. <u>Naruyki 108 in view of Fui</u>

The Office Action rejects claims 1-20 under 35 U.S.C. §103(a) over Naruyuki 108 in view of Fui. Applicants respectfully traverse this rejection.

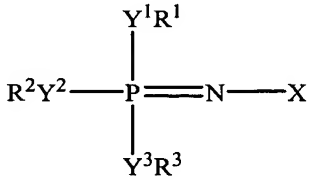
The Office Action takes the position that Naruyuki 108, in combination with Fui, teaches or suggests all of the features of claims 1, 8, 15 and 19 and dependent claims 2-7, 9-14, 16-18 and 20. Applicants respectfully disagree.

As discussed above, Naruyuki 108 does not disclose or suggest all of the features of independent claims 1, 8, 15 or 19. In particular, Naruyuki 108 does not disclose or suggest a "phosphazene derivative is represented by any of the following general formula (1) or (2):



Formula (1) wherein R^1, R^2 and R^3 each represents a monovalent substituent or a halogen element; X represents an organic group containing at least one element selected from carbon, silicon, germanium, tin, nitrogen, phosphorus, arsenic, antimony, bismuth, oxygen, sulfur, selenium, tellurium and polonium; and Y^1, Y^2 and Y^3 each represent a divalent linking group, a divalent element or a single bond; and in at least one of Y^1R^1, Y^2R^2 and Y^3R^3, Y is a single bond and R is a halogen atom; Formula (2) $(PNR^4_2)n$ wherein R^4 represents a halogen element; and n falls between 3 and 15," as set forth in claims 1, 8, 15 and 19. Thus, Naruyuki 108 alone does not disclose or suggest all of the features of claims 1, 8, 15 and 19 or their respective dependent claims.

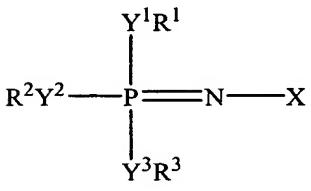
The shortcomings of Naruyuki 108 are not remedied by combination with Fui. As discussed above, Fui also does not teach or suggest all of the limitations of independent claims 1, 8, 15 or 19. Specifically, Fui, like Naruyuki 108, does not disclose or suggest a "phosphazene derivative is represented by any of the following general formula (1) or (2):



Formula (1) wherein R^1, R^2 and R^3 each represents a monovalent

substituent or a halogen element; X represents an organic group containing at least one element selected from carbon, silicon, germanium, tin, nitrogen, phosphorus, arsenic, antimony, bismuth, oxygen, sulfur, selenium, tellurium and polonium; and Y^1, Y^2 and Y^3 each represent a divalent linking group, a divalent element or a single bond; and in at least one of Y^1R^1, Y^2R^2 and Y^3R^3, Y is a single bond and R is a halogen atom; Formula (2) $(PNR^4_2)n$ wherein R^4 represents a halogen element; and n falls between 3 and 15," as set forth in claims 1, 8, 15 and 19. Thus, Fui, alone or in combination with Naruyuki 108, does not disclose or suggest all of the features of claims 1, 8, 15 and 19 or their respective dependent claims.

Because no combination of the cited references discloses or suggests a"phosphazene derivative is represented by any of the following general formula (1) or (2): Formula (1)



wherein R^1, R^2 and R^3 each represents a monovalent substituent or a halogen element; X represents an organic group containing at least one element selected from carbon, silicon, germanium, tin, nitrogen, phosphorus, arsenic, antimony, bismuth, oxygen, sulfur, selenium, tellurium and polonium; and Y^1, Y^2 and Y^3 each represent a divalent linking group, a divalent element or a single bond; and in at least one of Y^1R^1, Y^2R^2 and Y^3R^3, Y is a single bond and R is a halogen atom; Formula (2) $(PNR^4_2)n$ wherein R^4 represents a halogen element; and n falls between 3 and 15," as set forth in claims 1, 8, 15 and 19, Applicants respectfully submit that independent claims 1, 8, 15 and 19 would not have been obvious over the cited references.

For at least these reasons, Applicants respectfully submit that claims 1, 8, 15 and 19, and their dependent claims, are patentable over the cited references. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

II. Supplemental Evidence of Patentability

Applicants respectfully submit that the pending claims are patentable for at least the reasons set forth above. However, Applicants submit herewith the Declaration Under 37 C.F.R. §1.132 of Masashi Otsuki, in order to even more clearly show the features of the claims. *See generally* Declaration (attached). The Declaration summarizes the results of additional comparative experiments, in which non-aqueous electrolyte cells including phosphazene derivatives according to claimed formulae (1) and (2) that have at least one halogen atom single-bonded to a phosphorus atom (Examples 16-21) are compared with non-aqueous electrolyte cells including phosphazene derivatives according to claimed formulae (1) and (2) but in which no halogens are single-bonded to a phosphorus atom (Comparative Examples 7-8). *See* Declaration, page 3, Table 5.

As can be seen from Table 5, the phosphazene derivatives of Examples 16-21 are non-flammable, with no discernable flash point and low viscosity. *Id.* In contrast, the Comparative Examples 7-9 show that phosphazene derivatives according to claimed formulae (1) and (2) but in which no halogens are single-bonded to a phosphorus atom, while flame-retardant or self-extinguishable, have a detectable flash point and significantly higher viscosity than those of Examples 16-21. *Id.* It is evident from the comparison of these results that the phosphazene derivatives of Examples 16-21, which correspond to the claimed phosphazene derivatives, provide a safer, non-flammable alternative to the phosphazene derivatives of the Comparative Examples. *Id.* at pages 3-4. In addition, the phosphazene derivatives of Examples 16-21, unlike those of the Comparative Examples, display ionic conductivities high enough for the requirements of electronic devices. *Id.*

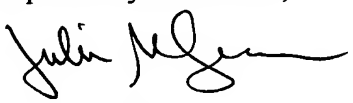
At least because of these demonstrated advantages, Applicants respectfully submit that the subject matter of the pending claims is patentable over the art of record.

III. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-20 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



James A. Oliff
Registration No. 27,075

Julie M. Seaman
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JAO:JMS/jms

Attachment:
Declaration Under 37 C.F.R. §1.132

Date: May 5, 2005

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Charge any fee due to our Deposit Account No. 15-0461